DOCUMENT RESUME

ED 177 043 SO 011 977

AUTHOR Hudson, Barclay M.
TITLE Forecasting Educational Futures. Resolving Uncertainties and Disagreements through Compact Policy Assessment.
INSTITUTION Barclay Hudson and Associates, Santa Monica, Calif.
PUB DATE Oct 78
NOTE 35p.; Paper prepared for the World Future Society Conference on Educational Futures (Houston, Texas, October 20-22, 1978)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Change Strategies; Citizenship; *Decision Making; Educational Alternatives; Educational Planning; *Futures (of Society); Needs Assessment; *Planning; *Policy Formation; Political Issues; *Program Evaluation; Public Policy; Research Needs; Social Problems

ABSTRACT

Descriptions of models for policy analysis in future studies are presented. Separate sections of the paper focus on the need for appropriate technologies of social science in future studies, a description of "compact policy assessment" (CPA), and a comparison of two CPA methods, Compass and Delphi. Compact policy assessment refers to any low-cost, short-term approach to project evaluation and decision making. It employs structured workshops to define key policy choices and issues, intensive short-term research on major points of uncertainty, special attention to lessons of historical experience in appraising new proposals, and use of concise, graphic reporting formats to gain early feedback. Both versions of CPA, Delphi and Compass, are designed to address complex problems with a fairly simple procedural formula, offer results based on judgment rather than objective data, encourage divergent exploration of new perspectives, emphasize the value of fruitful tension between opposing views, and seek to economize on information processing. Differences include compactness (Compass is a half-day procedure; Delphi is more elaborate), definition of issues (Compass is open-ended; Delphi employs standard survey research techniques), and methods of handling differences of opinion. An illustration of the use of Compass in assessing educational alternatives projected to the year 2000 and a discussion on the use of CPA to achieve a more sophisticated role for all citizens, including children, conclude the document. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED177043

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Barclay Hudson
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

APR 4 10 45 AM '79

FORECASTING EDUCATIONAL FUTURES.
RESOLVING UNCERTAINTIES AND DISAGREEMENTS THROUGH
COMPACT POLICY ASSESSMENT

Barclay M. Hudson*

SP011 977

Paper Prepared for the World Future Society/University of Houston
Conference on Educational Futures
Houston, Texas, 20-22 October 1978

*Barclay Hudson and Associates, 460 17th Street, Santa Monica, California 90402

Introduction. Appropriate Technologies of Social Science.

The further we look into the future, the less we rely on traditional methods of social science. Descriptive science tells us what is; future studies tell us what might be. Particularly in thinking about the field of education, the future opens up major areas of uncertainty and disagreement--about what might happen, what should happen, and what it takes to shape a preferred course of history.

Social science to serve future studies needs to be different from ordinary social science in several respects. (1) It requires more sensitivity to normative concerns--not knowledge for its own sake, but studies focussed on processes that make a difference in shaping significant social change. (2) Another difference is attention needed to concepts of free will, social mobilization, the dramaturgy of historical processes--the intangible element of human commitment that makes things happen, but which cannot be captured by traditional social science models of structurally predetermined flows and processes.

(3) Third, adaptation of social science to future studies requires standards of truth that go beyond traditional canons of objectivity and consensus. Those standards, borrowed from natural sciences, make sense for depicting a world of static, exogenously determined processes. They do not make sense for depicting significant meaning of future events, or differences in meaning between one observer and the next, or structural changes in the system being observed, or the qualitative change in social processes from one historical moment to the next.

(4) Future studies also call for greater reliance on heuristic methods of social science, and less reliance on algorithms. On the scale

of historical processes, it makes little sense to talk about optimization procedures or, for that matter, any kind of standardized procedures to maximize or minimize outcomes on the basis of objective functions, resources and constraints. Historical evolution simply does not work that way. Organizations do, but social evolution is not the same thing as organizational decision making. Society is not simply an organization writ large: its objectives are pluralist, its control systems are diverse and decentralized, its constraint functions are negotiable, and its resource capacities are continually being revised and expanded.* Most important, whereas an organization can choose its own specialized area of problem-solving (where algorithms have appropriate uses), society on the other hand must deal with whatever comes along, and must put as much energy into problem-definition as problem-solution--a job for heuristics.

---

* In the mid-Twentieth Century we are learning to recognize resources that fall well outside traditional categories. One has to count not only natural and economic resources, but human resources, cultural and scientific resources, communication and organizational capacities as well. To illustrate this point, economists began to acknowledge during the fifties that only a part of the economic growth of the United States can be accounted for by the classical economic resources of land, labor and capital. A large share of growth, possibly a majority, has resulted from a "residual factor," which has sometimes been described as "a measure of our ignorance," but probably includes such things as improvements in education, organizational efficiency, better health, advances of knowledge, job-related increases in workforce productivity, economies of scale, changes in composition of the national product, reduction of time-lag in applying new knowledge to practical use, improved productivity in fields like information management and data processing, changes in competitive pressures to improve performance, changes in levels of public honesty, regulations, legal procedures, pollution controls, flexibility in allocation of individual workers among jobs and tasks. Obviously, some of these factors may have worsened rather than improved over time. Nevertheless, they illustrate how broadly one can conceive of the concept of resources, and how difficult it is to model social processes in terms of deterministic processes that can be optimized using standard procedures. (See, for example, Fabricant, 1959; Solow, 1959; Denison, 1974.)

(5) As part of a greater emphasis on heuristic methods, social science needs to enlarge its repertoire of methods that build on systematic judgment, and not just on static conceptual models, quantitative analysis and objective data. Judgment includes use of hard facts, of course, but it processes information differently from most social science procedures: it involves more course-grain analysis, more use of images to give shape and texture to relationships, more placing of issues in a larger wholistic context to allow simultaneous diversity of problem perspectives; perhaps more use of right-brain thinking to complement the more linear thought processes of the left brain.

(6) Finally, social science for future studies needs to be more explicit about the areas of uncertainty and disagreement that surround forecasts. Conventional social science deals with questions of uncertainty by falling back on reductionist models, and the assumption of ceteris paribus--"other things being equal"--to keep discussion within the range of existing understanding. In future studies, however, the really interesting things happen precisely in taking the step beyond surprise-free scenarios into the realm where concerted social action or peculiar combinations of circumstances begin to take hold. The ceteris are by no means paribus in future studies. As soon as things are depicted more wholistically, points of uncertainty and disagreement become analytical crossroads from which future options take their point of departure. Issues in contention take center stage in an unfolding drama of possibilities, not merely half-finished bits of scenary relegated apologetically to the wings.

This paper attempts to define more appropriate technologies of social science that will satisfy the special requirements of future studies just listed. I will not attempt to discuss some of the important conceptual

issues of adapting social science to this task--issues having to do with the sociology of knowledge, the philosphy of science, and epistemology of normative historical analysis.* In this paper I will stick to practical techniques and procedures. The methods are not particularly new in themselves, but their application to future studies is still embyonic.

The methods I am referring to are drawn from the field of Compact Policy Assessment (CPA). In the following pages, I will briefly describe CPA, and then compare two distinct CPA methods. One is Delphi, which has familiar applications to future studies. The other is Compass, a procedure developed specifically for purposes of compact policy assessment, whose applications to future studies seems promising but still unproven. A subsequent section of the paper is addressed to ways that Compass can be used to create stronger links between future studies and more conventional practices of planning and policy assessment. By making such a bridge, Compass can help inject longer-term vision into day-to-day planning efforts, while also making future studies more sensitive to the short-term practical concerns of planners and policy analysis.

The final section of the paper illustrates the use of Compass by an application to assessment of education alternatives projected to the year 2000.

Compact Policy Assessment

Compact policy assessment refers to any low cost, short term approach to project evaluation and decision making. It uses some of the standard

---

* These issues are addressed elsewhere in two papers, "Varieties of Science: Not By Rationalism Alone" and "Dialectical Science: Epistemology for Evolving Systems." (Barclay Hudson, 1977.)

techniques of policy research, but it relies more heavily on informed judgment than elaborate quantitative methods, and more on compilation of available knowledge than development of new data sources.

Its major strength is providing a concise overview of social impacts beyond economic categories of benefits and costs. It generally adopts a task force approach to problem solving: structured workshops to define key policy choices and issues; intensive short term research on major points of uncertainty; special attention to lessons of historical experience in appraising new proposals; and use of concise, graphic reporting formats to present previews of tentative conclusions and gain early critical feedback.

Some versions of CPA emphasize diverse participation in policy debate, including program beneficiaries, sponsor and provider agencies, subject matter experts, special interest organizations, and other groups affected by decisions. This usually calls for procedures designed to keep discussion concise, relevant to practical actions and sensitive to qualitative and subjective concerns raised.

The research capacity of CPA generally consists of methods to exploit knowledge already on tap. In this sense, CPA operates on the premise that a great deal of information needed for policy making is already available, either in the form of expert judgment, local experience with past programs, or data filed away for other purposes.

CPA often needs to be supplemented by conventional longer term research on particular issues. Nevertheless, because CPA lays out the overall shape of a problem in terms of key questions, tentative answers and remaining unknowns, it prepares the ground for more focussed and effective in-depth analysis to follow. It provides an agenda for research on a strictly

need-to-know basis, and can help assure higher payoff to subsequent longer term efforts. It can also run in parallel with large scale policy analysis, serving as a forum for periodic review and providing fresh independent interpretation of findings reached by the main ongoing effort.

Who uses CPA? This depends on the version used, but the general approach is not bound to any core discipline, and the skills can usually be transferred through actual demonstrated use in solving practical problems. Typical users would include university-based programs in policy analysis and evaluation research; local governments involved in drafting of general plan elements or specific community development strategies; large organizations concerned with effective operation of task management systems; community groups drafting social programs to be funded by outside sources; or sponsors and service delivery agencies undertaking in-house evaluation of their own programs.

Applications of CPA may be narrowly focussed--for example, in evaluation of specific urban services such as education, housing and employment generation projects. Applications can also be broad--for example, in formulation of goals and strategy mixes for regional growth management, or in structuring public hearings on complex policy issues such as Proposition 13-type ballot measures.

CPA generally applies to situations which do not call for extensive original research or fine-grain precision in findings, but which require a concise and wholistic context for effective exercise of policy judgment. Policy judgments call for a capacity to balance considerations that are qualitatively very different--the weighing of objective economics against subjective political and aesthetic concerns; the benefits for one group against the costs for another; local history against lessons of aggregate

experience elsewhere; popular opinion and common sense against expert knowledge and refined technical data. Precise calculations are attempted in CPA only where they prove to be hinge-points for specific policy choices.

CPA procedures are drawn from a pool of methods, some well known and established, others still experimental or borrowed from fields outside of conventional policy analysis. A full menu of CPA methods would include planning balance sheet techniques (examples being the goals-achievement matrix and the logical framework); ends-means analysis (sensitivity analysis, assumptions critique, Delphi); scenario-writing (comparative case studies, field visits to prototype experiments, Visual I Ching and other image generating techniques); problem-solving and design methods (synectics, pattern language, cross-impact matrices); and various check-list procedures (standard techniques of investigative journalism, field visits by experienced observers, surveys of community leadership).

In addition, theoretical guides to CPA can be found in various planning literature aimed at alternatives to the rational comprehensive tradition. This includes work in the fields of advocacy planning, incremental planning, transactive planning, and the combined approach known as mixed scanning.

In practical applications, CPA needs to be somewhat eclectic, drawing from one set of techniques or another as the situation demands. One version of CPA, called Compass, has been developed specifically to incorporate the main ingredients of other approaches to compact policy assessment, with variations to allow for differing contexts of application.

The time frame and costs of CPA naturally vary according to the particular technique, the degree of outside participation, the emphasis

placed on exploring new policy options, and the depth of analysis pursued in short-term, decision-focused research. The budget for a CPA exercise can be reduced to the degree that the effort is carried out by in-house staff, or that cooperative time is denoted by public agencies or special interest groups, community representatives or other sources of expertise.

The case for CPA rests not so much on cost savings, however, but results. The main consideration is whether the user gives priority to concise and wholistic review of issues; a strong analytical focus on practical choices among clearly defined policy options; and an early preview of conclusions, as basis for systematic feedback on findings.

One Version of Compact Policy Assessment: Compass

Compass is a fast and inexpensive way of putting together a concise overview of pros and cons on a policy proposal, or a summary of outcomes from completed projects.

It is different from conventional policy analysis in a number of respects.

- It is short term--taking a day to two weeks--but can also be used for periodic review of results from longer term policy studies.
- It starts with a concrete proposal or program, but only as a point of departure for considering possible design modifications or new lines of problem-solving.
- It gives special attention to social impacts beyond economic benefits and costs--intangible outcomes and indirect effects that have to be weighed judgmentally by decision makers. It does not provide a strict decision rule, but attempts to lay out the overall shape of a problem and

the consequences of specific actions.

Compass operates in two stages. The first consists of a one- or two-hour workshop, with subsequent review and analysis of findings worked into a concise interim report for critical feedback--the entire process spanning about 24 hours. The second stage is optional, consisting of follow-up investigation into the tentative conclusions and key issues raised in the first report. This may range from a day to two weeks, and can include preparation of a longer term research agenda using more conventional methods of decision analysis and evaluation research.

Step One provides an inventory of policy issues together with suggested priorities for resolving them, based on several considerations: how directly the issues bear on specific policy choices; how specifically they represent points of genuine contention rather than simple confusion; how conclusively they can be resolved on the basis of existing knowledge--or whether they can be resolved by scientific analysis at all; how sensitively they reflect the expressed concerns of important groups who are affected by decisions and whose support for alternative policies hinges on the results of proposed investigation.

Participation in the initial workshop for scanning issues may comprise a fairly small team of subject experts and observers acting as informal proxies for other parties affected by the policies being addressed. The issue-scanning procedure can be adapted, however, to a broader forum of inter-agency discussions or open public hearings. It can also serve other forms of participatory planning, such as community-based advocacy planning or worker democracy in the management of organizations.

The workshop procedure begins with a canvass of judgments on possible outcomes from an existing program or proposal. Program impacts are listed

in a graphic display, noting especially the emerging points of disagreement and uncertainty. The procedure is structured, but in ways very different from Robert's Rules of Order, or Delphi methods, or ordinary public hearings. The pace is faster, the record is more graphic, the decision options are better defined. Positions are stated off the record. Supporting arguments and evidence are kept at minimum, because the objective at this stage is to raise issues, not resolve them.*

The process of issue-scanning may take an hour, or possibly several. It can go through several iterations, focussing on a series of policy alternatives, or involving successively more specialized groups of participants for deeper analysis of issues raised in earlier rounds. In preparing the report for this stage, the record from the graphic display is presented intact, but the list is also re-worked into a research agenda. Issues of fact, value, and cause-effect are separated out--an important step insofar as these different concerns generally need to be resolved by distinct methods of follow-up analysis. Some issues have a direct bearing on policy decisions; others emerge as less important in the overall context of other considerations raised. Some issues can be resolved by intensive, short-term

---

* The rationale for Compass has derived from its evolving use in practice, with some features borrowed from other methods of compact policy assessment. The graphic display, for example, serves several purposes: it keeps the overall shape of issues in view, which helps prevent polarization of opinion around isolated points. It also provides participants "random access" to any earlier point, so that the scanning of issues is not locked into any fixed logical sequence. The display encourages second thoughts about earlier assumptions, or subtle variations of response, often leading to important insights. Especially important, the graphic record keeps discussion concise: it helps prevent wasted repetition of statements; it reassures people that they have been heard; it reminds them that whatever they have to say, it must ultimately be reduced to single key phrase or illustrative example. Speakers get a point on the board only when they get to their punchline.

investigation; others point to the need for more elaborate studies such as benefit-cost analysis, long term evaluation research or in-depth feasibility studies.

Stage Two of Compass consists of a follow-up phase, taking any of several directions. One is investigation into critical issues guided by results from the earlier phase and feedback on the first report. This effort is focused on selected issues amenable to short term intensive research, emphasizing compilation of knowledge already available.

Additional work might be needed in drafting of a longer range research agenda for issues requiring more conventional policy analysis. This could serve in the preparation of requests for funding or in drafting responses to RFPs.

Results of the issue-scanning process can also be written up to serve traditional planning functions, such as goals formulation, social impact analysis, comparative review of policy options, social and technical systems analysis, or participatory involvement of the public in review of contemplated policy actions. The Compass approach can also be applied to a range of specialized problems, for example forecasts whose premises involve points of contention which are subject to modification by policies designed to reshape anticipated outcomes.

Compass Compared to Delphi

The Delphi method has been around for twenty years, and is now a familiar staple in the literature of forecasting and policy analysis, both in the United States and abroad. Delphi makes a good baseline for comparing the Compass approach, being a good example of compact policy assessment and sharing with Compass many features that illustrate the genre. Differences between the two approaches also help throw into relief the more unique properties of Compass.

The points of similarity will be listed below, then points of difference, and finally points on which Delphi has potential overlap with Compass, but in practice does so only in rare applications. In viewing these comparisons, it should be kept in mind that both Compass and Delphi have considerable flexibility. There are at least three versions of Delphi--the Delphi Exercise (the more conventional paper and paper approach), the Delphi Conference (or "real-time" Delphi, based on computer interaction among participants), and the Policy Delphi, which is the version closest to Compass and the approach cited in the comparison which follows. The similarities between Delphi and Compass are as follows:

- Both are designed to address complex problems, aiming at a systematic layout of important policy issues.
- Each provides its own fairly simple procedural formula for canvassing informed opinion about social processes, policy impacts, and the feasibility and desirability of new policy actions. Application of the formula can involve myriad variations, requiring sensitivity to group processes, as well as the users' objectives and the organizational setting of the discussion. In this sense both constitute an art as much as a science. Both are seen as a communication process rather

than a decision algorithm.

- They offer capacity to develop results based on judgment rather than objective data, in circumstances where judgment plays important roles (a) as a surrogate for unobtainable data; (b) as a context for liberating intuition and imagination in the discussion; (c) in dealing with issues that cannot be resolved by recourse to objective "almanac-type" facts, but only by a process of "refereed advocacy," or systematic confrontation between rival views; and(d) in dealing with attitudes, feelings, belief-states, subjective interpretations and other supplements to scientific intelligence.
- Both Delphi and Compass procede by discrete stages of analysis which can be iterated or skipped, compressed or expanded as the analysis procedes. Delphi's structure is inherently more constrained by a prespecified format of question-and-response, but both methods encourage a sequence of alternation between two types of thinking--divergent intuitive exploration of new perspectives on the one hand; and closure on policy findings on the other. Both yield results that may be sufficient in directly suggesting policy recommendations; but in most cases, the product constitutes merely one phase (one information component) of a larger process of policy analysis.
- Both emphasize the value of fruitful tension between opposing views. Neither looks for truth solely in consensus. Differences of opinion are treated as signposts for exploring alternative futures, gaining fresh perspective on social processes and pointing out new requirements for policy design.
- Both seek to economize on information processing by minimizing discussion in areas of general consensus. Only where divergent opinions

are at stake do they give freer rein to explicit marshalling of arguments and evidence to support advocacy positions on each side of the issue.

- Delphi and Compass share the same pitfalls associated with any form of compact policy assessment. Problems of bias can arise in selection of participants, in the personality of the person monitoring the procedure, in peremptory deflection of minority opinions, or in falling into a particular language, logic or conceptual paradigm for defining policy issues. Other problems stem from either over-rigidity or over-flexibility in applying each method. It is easy to overspecify any method, denying the need to adapt it to particular problem-solving situations. It is also easy to overlook the demanding nature of each method, mis-using it by ignoring the finesse that comes from experience or thorough grounding in its basic theoretical principles. These pitfalls are by no means unique to Delphi and Compass or other forms of compact policy assessment. But they come to light sooner in CPA, whose methods are more explicitly designed around the dynamics of group processes and the confrontation of divergent viewpoints. They address a "negotiated reality" rather than the thin slices of social truth to be known by purely "objective" data.

Compass is distinct from Delphi in a number of respects, some substantial, some merely reflecting differences in emphasis. Starting with the most important:

- Compactness. Compass is basically a half-day procedure resulting in an immediate, concise report with optional stages of follow-up. Delphi is considerably more elaborate: it involves pre-formulation of major issues and preparation of a questionnaire requiring a month

or more of advanced work (Turoff, 1975, p. 93). Large amounts of written material are produced, largely unsynthesized, much of it redundant and sometimes painful to wade through in search of occasional nuggets of wisdom. Particular issues are re-processed through three or more iterations of questionnaires, calling for major flows of paper and the scheduling of successive meetings by participants. (The "Conference" version of Delphi attempts to minimize the problems of information management by real-time iterations using an interactive computer program, sometimes in conjunction with a network of remote terminals.) Compass, in contrast, uses a graphic display board, which keeps track of issues, synthesizes results, and focuses on the pros and cons of particular policy options. There is less emphasis on quantitative measurement of the range of responses; nor are the issues pre-formulated. Delphi assumes that the "right" questions can be stated in advance without biasing the selection of new issues raised by participants. Compass, on the other hand, leaves defintion of issues entirely up to participants themselves.

- Definition of issues. In selecting issues to be addressed, Delphi focuses on dimensions of a situation that can be depicted by some scalar response. For example, respondents are asked to predict predefined outcomes by rating them high/medium/low in terms of feasibility, desirability, or relevance to policy design. Questions and responses are transmitted on paper or by means of computer interactions. Questions are carefully worded so that everyone attributes the same meaning to the same question. The methodology is close to standard survey research. In contrast, the policy issues raised in Compass are open-ended. A single question is used to catalyze

responses--"Are you for Policy X or against it--and why?" The question may vary: "Was Project X a success or not?" Or, "What Would It Take to make Program X work as well here as it did somewhere else?" Or "Would the local community support Experiment X--How could benefits be channelled to groups presently opposed or unconvinced?" Or, "From the standpoint of social justice, is this an adequate distribution of benefits--What are the needed adjustments?" Responses are not expected in a standard language, nor always based on scientific evidence. Personal experience, historical anecdotes, emotional appeal, stakeholder interests in supporting one side or another--along with expert judgment on issues of feasibility and likelihood--all these count in making policy judgments, and Compass makes a place for them in scanning of issues. Compass allows for not only different expressions of expertise, but different modes of knowing reality (see Polanyi, 1964; Churchman, 1971).

- Handling differences of opinion. A key feature of Delphi is preserving the anonymity of respondents, in order to avoid the bias imposed by dominating personalities, and authority figures who may unduly influence the group. Participants communicate entirely on paper or between computer terminals in order to reduce the "band wagon" effect that sometimes exerts itself in group dynamics. Compass, on the other hand, uses other means to preserve independent thinking.

(a) Participants are diverse in Compass--more than in Delphi which relies mainly on selected experts liable to judge each other as peers. Compass participants may include representives of community interests, provider agencies, sponsors, beneficiaries, stakeholders, and others. Representation may consist of actual delegates from the various

constitutencies, or simply in-house spokespersons taking on the roles of other groups whose positions are to be taken into account. (Role-playing can usually be informal rather than a highly structured set of assignments.) The objective is not an exercise in representative government, but a way to insure that people can speak "off the record" - proposing views beyond the range expected of them in their normal roles, and beyond the purview of their established expertise.

(b) In Compass, the moderator's role is designed to elicit opposing views, including statements that may not represent any particular group of stakeholders or conventional wisdoms. Creating a dialectic between contending viewpoints can cometimes be very simple--a matter of saying, "Here we have these assertions already on record. Now, what contrary possibilities might be considered? What would it take to suggest a case for opposite facts, assumptions, values? What different social processes and conditions would lead to different conclusions?" Usually, this style of questioning is enough by itself. Sometimes, however, the moderator has to be more aware of the theory and philosophy of dialectical or divergent thinking, relating both to the literature on group processes (Argris and Schon, 1975; Cooper, 1975), and the epistemology of policy analysis (Mason, 1969; Allison, 1972; Campbell, 1974; Mitroff and Turoff, 1975; Hudson, 1977; Friedmann, 1978).

(c) In Delphi, issues are voted upon, resulting in a distribution curve which tends to become more clustered and stable with succeeding iterations. In Compass, there is less emphasis on quantitative measurement of where opinions fall on a continuum. There is no counting of votes. Instead, each position-statement counts as "one."

In a follow-up to the Compass session itself, some position statements emerge as more important than others--(i) when they represent points of contention, indicating need for futher debate and research, (ii) when resolution of disagreement makes a clear difference in accepting or rejecting the policy actions under review, and (iii) when it seems feasible to resolve the area of doubt on the basis of a short-term, intensive research effort after the Compass procedure itself is concluded.

(d) Compass relies upon a single graphic display summarizing position statements (pros and cons, or judgments of success and failures). A blackboard does well, or a large sheet of butcher-paper. Statements representing minority views get recorded alongside majority opinions. This further supports the principle of "one viewpoint, one vote." Points of contention are highlighted.

(e) The pace of Compass moves very quickly from one statement to the next. Discussion is not geared to resolving particular issues, but to generating an overview of the common and diverse understandings of the problem as a totality. The pace of discussion, the random access that participants have to new and old points, the graphic display which keeps each point in perspective--all tend to keep participants from becoming polarized around single isolated issues--the bane of traditional workshops, committee debates, conferences, and public hearings. The graphic display gives participants a greater sense of identity with a shared product. Points of uncertainty are treated as constructive contributions to the assessment of practical options, not as bones of contention to be fought over in the usual style of "I win--you lose" intellectual debate. Raising of doubts and

uncertainties about earlier points does not become an ad hominum attack on someone else's thinking--not a statement of what was wrong with that earlier statement--but rather a way of opening up a richer spectrum of possible interpretations.

(f) All of the above devices help to encourage open expression of minority views. There remains, of course, room for bias, and no guarantee against omissions of perception in defining key issues. There is a bandwagon effect, too, but in a different sense than the phenomenon feared by Delphi. The danger of being trapped by "dominant wisdoms" is relatively minor, because the product of a Compass exercise is a jointly constructed decision landscape, not a comparison of peer voting behavior among "experts" whose answers directly reflect upon their professional competence. There is a bandwagon effect in Compass, but it is not measured through voting patterns. Face-to-face interaction results in a form of creative tension that is missing from paper communications and man-computer interface. There is a greater intensity of real time interaction allowing people to react dialectically; more sanction to raise tentative possibilities, to voice intuitions, to express personal insights in concrete images and anecdotes; more leeway to diverge from agendas (overt or hidden) to consider forms of truth on the level of human feelings, attitudes and belief states, apart from objective evidence. Group dynamics have the potential for creative diversity, synergistic insights, and injection of relevant emotional content in dealing with issues--just as they have potential for biasing or restricting thought. Delphi's answer is to supress group dynamics as much as possible; Compass aims at channeling its energy into appropriate and productive debate.

- Compass insists on beginning with a concrete scenario--a context specific enough for participants to have a solid context in expressing judgments. In contrast, Delphi inquiries usually refer to general propositions or conceptual qualities abstracted from a larger social context. There are two reasons why Delphi relies more on abstractions. One is that Delphi participants represent selected experts in the field --a class of professionals used to dealing with the particular concepts being addressed, and comfortable in dealing with reductionist models of reality. (In contrast, Compass participants are usually less specially selected.) Secondly, Delphi seeks answers based on voting about a series of outcomes reduced to scalar dimensions: it looks at things that will happen along a continuum of events or probabilities. In Compass, on the other hand, it is important to begin with a tangible, wholistic reality. There has to be a real elephant for the proverbial blind men to get their hands on. In the course of a Compass exercise, the shape of the thing being scrutinized might change, in response to insistent probing for new interpretations. But neither the original proposition nor the final results need to be expressed in terms of abstracted scales and ratings. Some people simply do not experience reality as a series of scales, but instead in wholistic images, based on experiences that take place in a specific historical contexts and in places with proper names. (See for example, Sheele, 1975; Soja, 1973.)
- The distinct origins of Delphi and Compass may explain many of their differences listed above. Delphi began in the fifties as an Air Force-sponsored project at the Rand Corporation, focussed on the problem of optimal targeting of A-bombs. Until the mid-sixties, Delphi continued to evolve exclusively in the context of military science. It is hard

to say whether a methodology has a "genetically determined" worldview, (or "species memory" to paraphrase Jung). Thomas Kuhn has argued that paradigms represent an interlocking, mutually supporting structure comprised of methods, characteristic problems, philosophical attitudes and societies of believers. (The Structure of Scientific Revolutions, 1970.) Ida Hoos, in a critical study of the history of systems analysis, concluded that policy analysis methods developed in the defense industry have not adapted well to civilian applications, in part because they tend to revert to a military way of seeing problems and solutions, and a military style of carrying out the analysis itself. (Hoos, 1972.) If this holds true for Delphi, its military origins may explain a number of its present features: the increasing acceptance of computers as interface between adversary positions; the minimization of emotional content in question and response; the use of anonymous answers in place of interpersonal dialogue; the willingness to undertake the large organizational effort of advance work and handling of information flows between separate phases of results; the reliance on experts, as opposed to a more democratic cross-section of public opinion; the insistence on getting answers--not necessarily consensus, but at least answers--to the exclusion of issues that represent unanswerable social dilimmas.

In contrast, Compass is a distillation of methods derived from social impact analysis and evaluation of social projects and policies. Typical uses of Compass are in areas such as evaluation of local impacts of transportation plans (Hudson, Wachs and Schofer, 1974), and review of non-formal education strategies designed to promote social mobilization for national and regional development. Compass

was initiated in part as a response to the limitations of the rational comprehensive tradition of urban planning, and draws on alternative traditions including advocacy planning, incremental planning, and transactive planning (see Hudson, 1977a, 1977b, 1978). It also reflects a concerted attempt to inventory a range of other methods that fall within the general category of "compact policy assessment," of which Compass is just one example.

Compass vs. Delphi: Two Treatments of a Future Educational Scenario

Let us take a scenario for the year 2000: we are on the verge of an Educational New Deal. Of course it has taken some sort of major crisis to make it happen--perhaps an economic depression, perhaps a major realignment of world spheres of influence over scarce natural resources, maybe a war; or possibly a major new political leader to articulate some old ideas (from the 1970s) whose time has finally come.

The New Deal in education reflects a critical turn of social, economic and political events--as is true of all educational revolutions. In this case, 2000 was the year that an unofficial caucus of highly placed people in the judiciary, the legislature, the executive branch, the media and private business drafted a National Manifesto for a Basic Needs Economy. This defined not just priorities but absolute targets for providing adequate food, housing, health, employment, and sports facilities for everyone in the United States, within one generation. With one out of three Americans already employed by government (double the ratio from 1976) the problem was not seen as one of finding resources or coordinating efforts, but one of educating the present and subsequent generations to the task.

Compass and Delphi are both appropriate techniques for developing such a scenario in greater detail, and for defining the necessary elements of a New Educational Deal to serve the projected Basic Needs Economy. In some respects, however, their respective products would be quite different.

Delphi would start with several weeks of advance work in selecting a group of experts to design a questionnaire for other experts to give their opinions on a particular set of pre-defined issues. The questionnaire might cover such things as the probable levels of initial unemployment, the scope of new job categories needing to be cr and the skill deficits needing to be overcome. Estimates of change in productivity of education might be considered, to establish orders of magnitude for budget allocations. Effects of selected new didactic technologies would be considered in estimating the educational flows of resource inputs and learning outputs. The kind of questions asked would be those whose answers could be reduced to a series of rating scales, to register the votes of experts on a continuum: "Is such-and-such a component of the New Educational Deal likely? Is it desirable? Is it important, relative to other components?" The answers are rendered in the form of a distribution curve summarizing the range of expectations. Specific reasons are not recorded as to why an outcome is important or desirable or likely. Reasons may emerge in discussion between iterations of voting, in explaining divergent votes in earlier rounds. But the final product is expressed in numerical counts of votes on the selected issues chosen in the initial questionnaire design.

Compass starts with a more open-ended definition of the issues: "What is the range of positive and negative effects stemming from [an initial sketch of] the New Educational Deal itself?" The NED is not defined just by numbers, but in terms of processes and organizational forms, human

meanings and attributed historical significance, derived from an understanding of past educational upheavals in the United States: the Land Grant College model; the conversion to a war-time economy in the late 1930s and reconversion after 1945; the experience of other countries in overhauling education to meet their own versions of a Basic Needs economy. The NED "sketch" would serve only as a catalyst, to be absorbed, torn apart, and replaced, hopefully leaving behind a different and much improved version. But it would start people off with a set of concrete images--something they could relate to and chew upon, get enthusiastic about or angry about, filling in details or offering alternatives in a synergistic reaction to confrontation of a three-dimensional situation.

More than Delphi, Compass would focus explicitly on points of uncertainty and disagreement, and on hidden assumptions about the NED and the circumstances that led up to it. In throwing out reasons to support the NED, new insights might be generated about the role of education in fostering or undermining provision for basic needs historically (including its role back in 1978). Some participants might see positive outcomes from the sketch of NED in terms of generating employment opportunities for the poor as "peer-teachers;" or in demonstrating the feasibility of a Basic Needs economy to other countries; or in exploring resource-conserving technologies independent of traditional market economics; or in developing new cultural aspirations that distinguish between an "advanced" society and high consumption levels: or that transfer to work some of the demands for human satisfaction that are now focussed on leisure or consumption activities.

Negative reactions to the NED sketch would raise other issues. Fears that NED would reinforce state control might point in the direction of provisions for vesting local communities with authority both over the Basic

Needs sector of the economy and the planning of mini-NED alternatives. Critics might also point out that the whole scheme could be interpreted as a ploy to pacify Third World aspirations toward resource-depleting life-styles of their own. (Some educators in poor countries have puzzled over the attraction of "small is beautiful" and "de-schooling society," having attained that kind of status long before the idea was popular in America.) Other Compass participants could observe that the NED would likely acquire the label of "un-American"--an accusation that eventually killed the most interesting and successful New Deal experiments in cooperative farming. These are real considerations--not necessarily the kind of things that would ordinarily come to mind among educational experts or economists or futurologists in evaluating an educational scenario for the year 2000--but the kind of thing that does get attention in the mere freewheeling procedures and diversified audience of a Compass exercise. Political, ideological, esthetic, cultural and psychological interpretations of reality constitute important bases of social action. They make up part of the real fabric of historical processes. They do not come easily to the surface in professional discussion of generalized scenarios or abstracted relationships of cause-and-effect. They do find expression, however, in settings where a cross-section of people are asked to react to <u>specific</u> proposals.

The quality of personal interactions between participants in a Compass exercise is very different from the way informed judgments are pooled in a Delphi. The quality of perceptions about what is at stake in evaluating alternative futures is affected accordingly. Neither Compass nor Delphi is inherently superior, but they tap into different sources of understanding about reality. Both have an important role, then, in the study of educational futures, particularly in the way they deal with critical points of

uncertainty and disagreement.

Compact Policy Assessment. Toward Permeative Planning

Compass and Delphi are two examples of a small but growing set of methods for compact policy assessment. As already described, CPA serves as a low cost short term approach to policy evaluation, relying on informed judgment and compilation of available knowledge, with the object of providing a concise overview of social impacts beyond economic categories of benefits and costs.

The rationale for Compact policy assessment reflects three basic considerations--three increasingly visible requirements of policy analysis and forecasting for the late twentieth century. One is the need for long-range (ten to fifty-year) planning horizons. This has always been obvious in the field of educational planning, given the extended lead times needed between forecasts of social and economic skill requirements and adjustment of supplies through the long educational pipeline. Forecasts extended to the distant future, however, require special attention to the underlying assumptions. Considerable pooling of informed judgment is needed to reckon with decision-relevant variations in outcomes. Compact policy analysis applies well for those purposes--not as a substitute for rigorous quantitative modelling, but as a supplementary procedure to assist in the interpretation of findings.

Secondly, forecasting and planning are becoming more problematic due to the complexity of socio-technical systems and the rapidity of change. Toffler pointed out the implications of future shock on social organization: the coming Ad-hocracy, "the arrival of a new organizational system that will increasingly challenge and ultimately supplant bureaucracy." (Toffler,

1970, p. 125.) Toffler perhaps exaggerates this trend (short-term futurology generally errs on the side of optimism). But he is not alone in defining the need for a new style of organization to deal with turbulent environments: greater reliance on a task-force style of management, less delegation of planning functions to permanent specialized institutions, and more reliance on temporary, ad hoc, highly participatory teams, created in the interstices of traditional institutions. (See Lawrence and Lorsch, 1967; Argris and Schon, 1975; Godschalk, 1974.) In this setting, too, compact policy assessment is an appropriate technology.

Third, planning theory and practice are increasingly defining the limitations of modelling large scale, highly aggregate futures (Lee, 1973; Friedmann, 1971). Increasing attention is being paid to local experience in problem-solving and site-specific contingencies affecting decisions. This is reflected in the recent literature of advocacy planning (Heskin, 1977), transactive planning (Friedmann, 1973) and bottom-up planning (Hudson and Davis, 1976). Planning is acquiring the potential to become a more permeative social process. Techniques, attitudes and organizational bases for policy analysis and debate are beginning to diffuse out beyond the confines of government agencies and industrial think-tanks into public life at all levels.

In an advanced technocratic society, "maximum feasible participation"--in fact, meaningful democracy of any kind--calls for a more sophisticated role for citizens than passive voting. It requires systematic means of policy debate coupled with a wholistic way of perceiving complex issues through procedures accessible to ordinary people. Compact policy assessment offers the kind of "portable" toolkit of methods needed to serve in this role.

A couple of examples suggest how close we may be to developing an effective capacity for permeative planning, as reflected in recent thinking about educational curricula. Starting at the kindergarten level, educators seem to be on the verge of crediting children with the capacity to understand and assimilate basic planning skills. One example is a program based in Los Angeles called City Building (Nelson, 1977). Now in its eighth year, City BuildingEducation Programs is a non-profit corporation that contracts with five Los Angeles County unified school districts. CPEB is the invention of Doreen Nelson, a grade-school teacher and university lecturer, whose initial objective was to teach basic skills in environmental education. CPEB now takes on a far broader role. Kids literally build model cities, developing skills of measurement and math, science, reading, communications and manual arts. The core of City Building is the teaching of "future-thinking," emphasizing processes as well as products, attitudes as well as facts, concrete activity as well as book-learning. It stresses two key techniques: invention (creative thinking and fantasizing) and problem-solving (a gamut of techniques and attitudes, including risk-taking and learning from error; studying resources and constraints; decision-making and team-work).

Another indication of growing respect for the "child as planner" comes from the National Education Association conference held in 1972 to solicit views of 50 distinguished educators and "world citizens" on the future of American education in 1976-2001 (Shane, 1976). A summary of their findings concluded that emerging curricula would need to stress knowledge of <u>realities</u> (including development of "anticipatory skills"); awareness of alternative <u>solutions</u> to problems; understanding of <u>consequences</u> following from these options; ability to make wise <u>choices</u>; and capacity to perceive the requirements of <u>implementing</u> chosen courses of action. It happens that these tasks

comprise a classic description of the "rational comprehensive" tradition of urban planning. The rationalist tradition has limitations, to be sure (see Hudson, 1978) and curricula for the child as planner need to be supplemented by exposure to other styles and forms of planning as well. (The City Building program is outstanding in this respect.) But even by itself the rationalist tradition is at least a good place to start.

Concluding Thoughts

Education and future studies are closely linked on a number of levels. In purely functional terms, educational planning--both the allocation of resources and design of substantive change--requires a clear vision of the kind of world ahead for the next generation. In pedagogical terms, the contribution of future studies to classroom and lifelong learning is also becoming increasingly apparent: alongside the three R's, more and more attention is being given to the skills of anticipation, problem-solving, understanding of historical processes, and practical experience in working toward alternatives futures.

There is another link between education and future studies, which is comparatively neglected in each field. That is the discovery of ourselves: what motivates us and makes us effective as individuals; who we can trust in working toward shared objectives; what beliefs we rely on--not just our espoused theories, but our theories-in-use (see Argyris and Schon, 1975); what makes each of us unique in our personal needs and our ability to give and take from others; what images we create for our own futures; what makes us open or closed to alternative possibilities.

These are highly personal questions, that need to be worked out alone, or within small groups, or within the dynamics of specific times

and places. Teachers are not trained to facilitate this process of personal searching. Public education as a whole does not know how to deal with that mandate very well. Individual kids may work it out, through their family, or peer groups, or in the streets, but it usually involves processes of struggle and discord that tend to be suppressed in a classroom setting. "Finding oneself" or finding one's place in a group or society involves a series of confrontations with dilemmas that have no objectively correct resolution, but only a gradual clarification of one's "sense of place" (McCaskey, 1977).

The search is part of education, but also close to the heart of future studies. As Maurice Maeterlinck once pointed out (1907, p. 8) "The future is a world limited by ourselves; in it we discover only what concerns us...." It follows that methods of future studies need to start with more than objective facts projected into the future or expert judgments about the shape of probable events. Just as important is the capacity of individuals and groups to articulate themselves and their potential through clear images of what they can commit themselves to collectively strive for. Uncertainties and disagreements need to be resolved not only through scientific facts, but through psycho-social mobilization toward the expression and realization of common interests. Compass is one approach to articulation of these states of feeling. There is room for more of this in other approaches to future studies as well.

REFERENCES

Allison, Graham T. (1968) Conceptual Models and the Cuban Missile Crisis: Rational Policy, Organizational Process, and Bureaucratic Politics. Cambridge, Mass.: Harvard University Press.

Argyris, Chris and Schön (1975) Theory in Practice. San Francisco: Jossey-Bass.

Campbell, Donald T. (1969) "Reforms as Experiments," American Psychologist 24:4 (April), 409-29, reprinted in Francis Caro, ed. (1971) Readings in Evaluative Research. New York: Russell Sage Foundation, 1971. Also in Carol M. Weiss (1972) Evaluating Action Programs. Boston: Allyn and Bacon, Inc.

Churchman, Charles West (1971) The Design of Inquiring Systems: Basic Concepts of Systems and Organizations. New York: Basic Books.

Cooper, Cary L., ed. (1975) Theories of Group Processes. New York: John Wiley & Sons.

Denison, Edward F. (1974) Accounting for United States Economic Growth 1929-1969. Washington, D.C.: The Brookings Institution.

Fabricant, Solomon (1959) Basic Facts on Productivity Change. Washington, D.C.: National Bureau of Economic Research, Occasional Paper No. 63.

Friedmann, John (1971) "The Future of Comprehensive Planning." Public Administration Review (May-June), pp. 315-326.

Friedmann, John (1973) Retracking America. A Theory of Transactive Planning. Garden City, N.Y.: Doubleday-Anchor.

Friedmann, John (1978) "The Epistemology of Social Practice: A Critique of Objective Knowledge." Theory and Society 6:1 (July), pp. 75-92.

Godschalk, David R., ed. (1974) Planning in America: Learning From Turbulence. Washington, D.C.: American Institute of Planners.

Heskin, Allan (1977) "Crisis and Response: An Historical Perspective on Advocacy Planning." Los Angeles: UCLA Urban Planning Program, Working Paper DP-80.

Hoos, Ida M. (1972) Systems Analysis in Public Policy: A Critique. Berkeley: University of California Press.

Hudson, Barclay M. (1977) "Educational Planning: Notes on the State of the Art." Los Angeles: UCLA Urban Planning Program, Working Paper DP-104.

Hudson, Barclay M. (1977) "Varieties of Science: Not by Rationalism Alone" and "Dialectical Science: Epistemology for Evolutionary Systems." Los Angeles: UCLA Urban Planning Program (manuscript).

Hudson, Barclay M. (1978) "Planning: Typologies, Issues and Application Contexts." Los Angeles: UCLA Urban Planning Program, Working Paper.

Hudson, Barclay M. and Russell Davis (1976) Knowledge Networks for Educational Planning. Strategies for the Better Use of University Resources. Los Angeles: UCLA Urban Planning Program.

Hudson, Barclay M., Martin Wachs and Joseph Schofer (1974) "Local Impact Evaluation: Ingredients for Network Design." Journal of the American Institute of Planners 40:4 (July), pp. 255-265.

Illich, Ivan (1972) Deschooling Society. New York: Harrow Books.

Kuhn, Thomas S. (1970) The Structure of Scientific Revolutions. 2nd ed. Chicago: University of Chicago Press.

Lawrence, Paul and Jay W. Lorsch (1967) Organization and Environment. Managing Differentiation and Integration. Boston: Harvard Graduate School of Business Administration, Division of Research.

Lee, Douglass B. Jr. (1973) "Requiem for Large-Scale Models." Journal of the American Institute of Planners 39:3 (May).

Linstone, Harold A. and Murray Turoff, eds. (1975) The Delphi Method. Techniques and Applications. Reading, Mass.: Addison-Wesley Publishing Company.

Maeterlinck, Maurice (1907) Joyzelle. Trans. by A. Teixeira de Mattos. New York: Dodd, Mead & Co.

Mason, R. O. (1969) "A Dialectical Approach to Strategic Planning," Management Science 15 (April): B-403-414.

McCaskey, Michael B. (1977) "Goals and Direction in Personal Planning," Academy of Management Review 2:3 (July), pp. 454-462.

Mitroff, Ian A. and Murray Turoff (1975) "Philosophical and Methodological Foundations of Delphi." Pp. 17-36 in Linstone and Turoff, eds. The Delphi Method.

Nelson, Doreen (1977) "City Building: A Way to Learn." Social Studies Review 16:3 (Summer), pp. 1-5.

Polanyi, Michael (1964) Personal Knowledge: Towards a Post-Critical Philosophy. New York: Harper Torch Books (orig. pub. 1958).

Shane, Harold G. (1976) "America's Educational Futures," The Futurist 10:5 (October) pp. 252-257.

Sheele, D. Sam (1975) "Reality Construction as a Product of Delphi Interaction." Pp. 37-73 in Linstone and Turoff, eds. The Delphi Method.

Soja, Edward W. (1973) "Comparative Urbanization Studies: An Inquisitive Overview," in Research Traditions in the Comparative Study of Urbanization, John Friedmann, Edward W. Soja et al. Los Angeles: UCLA Urban Planning Program, Occasional Paper CU-1.

Solow, Robert M. (1959) "Investment and Economic Growth: Some Comments." Productivity Measurement Review 19 (November), pp. 62-68.

Toffler, Alvin (1970) Future Shock. New York: Bantam Books.

Turoff, Murray (1975) "The Policy Delphi." Pp. 84-101 in Linstone and Turoff, eds. The Delphi Method.